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Reply to Office Action of 10/31/2005

REMARKS/ARGUMENTS

There are no amendments to the specification or drawings herein.

In the Claims, Claims 1-12 and 14-35 are pending. Claims 15-20 are allowed. Claims 1-12, 21-28 and 30-35 are rejected and Claims 14 and 29 are objected to. Reconsideration is respectfully requested.

Applicant has amended Claim 4 herein to improve antecedent basis with respect to Claim 1 from which it is dependent. The amendment does not change the scope of Claim 4, as previously presented. Entry and consideration of the amendment to Claim 4 are respectfully requested.

Applicant has amended Claims 10 and 14 herein. Claim 10 is amended to clarify the subject matter therein. Support for the amendment of Claim 10 is found at least in Claim 10 and the specification, as originally filed. Claim 14 is amended to better agree with Claim 10 from which it is dependent. Entry and consideration of the amendments to Claims 10 and 14 are respectfully requested.

Applicant has further amended Claims 21 and 26 herein. Claim 21 is amended to clarify the subject matter therein. Support for the amendment of Claim 21 is found at least in Claims 1 and 21 and the specification, as originally filed. Claim 26 is amended to clarify the subject matter therein. Support for the amendment of Claim 26 is found at least in Claims 1 and 26 and the specification, as originally filed. The amendments do not affect the intended scope of Claims 21 and 26, as originally filed, but serve only to provide clarification of the subject matter therein. Entry and consideration of the amendments to Claims 21 and 26 are respectfully requested.

Applicant appreciates the Examiner acceptance and entry of amendments to the claims offered in a previous Response/Amendment filed August 8, 2005 (hereinafter 'Previous Response'). Applicant further appreciates the Examiner's withdrawal of the rejections under 35 U.S.C. 112, first paragraph, from a previous Office Action mailed May 13, 2005 (hereinafter 'Previous Action') based on the claim amendments.

Applicant notes that in the present Office Action mailed October 31, 2005 (hereinafter 'Present Action') the Examiner has *changed the status* of Claims 7, 8, 22, 24, and 28, from 'objected to but allowable if rewritten' to 'rejected' in view of previously applied prior art. In the Previous Action, the Examiner indicated that each of these claims was, "allowable if rewritten in independent form," for the "same

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reason of allowance applied to claim 15". The claims in question were not amended in the Previous Response. In the Present Action, the Examiner provided no explanation or justification for the change in status. In fact, the Examiner is silent on this change in status. Applicant is confused by and strongly objects to the change in status without an explanation from the Examiner.

Specifically in the Present Action, the Examiner changed the status of Claims 7 and 8 from 'objected to' to 'rejected' under 35 U.S.C. 102(b) in view of Zwirn et al., U.S. Patent No. 4,789,898 (hereinafter 'Zwirn et al.'). The Examiner's only statement regarding the new and unexpected rejection of Claims 7 and 8 under *previously* cited art was that the Claim 7 had been, "similarly analyzed and rejected as per claims 1-3 and 5" while Claim 8 had been, "similarly analyzed and rejected as per claims 1-3, 5 and 7". *No explanation regarding why their status in the Previous Action had inexplicably changed from 'objected to' to 'rejected' was given.* Similarly, in the Present Action, the Examiner changed the status of Claims 22, 24 and 28 from 'objected to' to 'rejected' under 35 U.S.C. 103(a) in view of Zwirn et al., further in view of Onoguchi et al., U.S. Patent No. 6,067,164 (hereinafter 'Onoguchi et al.'). The Examiner's only statement regarding the new rejection was that Claims 22 and 24 had been separately, "similarly analyzed and rejected as per claims 21, 1-3, 5, 7-8, and 10-12" and that Claim 28 had been, "similarly analyzed and rejected as per claims 26, 21-24, 1-3, 5, 7-8, and 10-12". *Again, no explanation regarding why the status of Claims 22, 24 and 28 in the Previous Action had inexplicably changed from 'objected to' to 'rejected' was given.*

In addition, following the Examiner's suggestion of the Previous Action to rewrite the claims in independent form, Applicant presented in the Previous Response new Claims 31-35 representing various ones of Claims 7, 8, 22, 24, and 28, rewritten in independent form. According to the Examiner's statement in the Previous Action, the new claims *should be* allowable. However, in light of the Examiner inexplicable change of status, the Claims stand rejected in the Present Action. Applicant is dismayed and troubled that these new claims, presented and *paid for* in the Previous Action with the Examiner's assurance of allowability over the prior art of record, which has not changed, now stand rejected.

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Applicant reminds the Examiner that the applied prior art is the *same* in the Previous Action as in the Present Action and that the Applicant made no changes to the claims in the Previous Response. As such, there would seem to be no discernable reason for the Examiner to change the status of these claims. Applicant respectfully requests the Examiner reconsider and withdraw the rejections. *If the rejections are not withdrawn, Applicant respectfully requests that the Examiner provide an explanation in writing regarding why the change in status was warranted.* Such an explanation must contain more than "has been similarly analyzed and rejected per claims x" in order to be complete and clear.

The Examiner rejected Claims 1-3, 5-8, 10-12 and 31-33 under 35 U.S.C. 102(b) in view of Zwirn et al., U.S. Patent No. 4,789,898 (hereinafter 'Zwirn et al.').

Applicant traverses the rejection of Claims 1-3, 5-8, 10-12 and 31-33 on the grounds that the Examiner failed to establish a *prima facie* case of anticipation with respect to Zwirn et al. In particular, Applicant submits that Zwirn et al. do not disclose, explicitly or implicitly, "each element of the claim under consideration" (*W.L. Gore & Associates v. Garlock*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983)) and further that Zwirn et al. do not disclose the claimed elements "arranged as in the claim" (*Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)), as *required* by the Federal Circuit for *prima facie* anticipation under 35 U.S.C. 102.

Regarding Applicant's base Claim 1, Zwirn et al. at least fail to disclose or suggest, "using either a comparison between an image of a typical object and an image of the object created by the imaging system or an edge density in an image of the object and the comparison to determine an optimum focus position," as recited therein. For example, Zwirn et al. do not disclose, "an image of a typical object," or, "a comparison between an image of a typical object and an image of the object created by the imaging system," or using such a comparison to, "determine an optimum focus position", as defined and claimed by Applicant.

In particular, at Page 13, lines 1-5, of Applicant's specification as filed, Applicant defines a 'typical object' as, "an object that is representative of a class of objects". According to Applicant's specification, the 'typical object' and an image or set of images thereof is distinguished respectively from the 'object' being imaged and

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the "image of the object created by the imaging system". In particular, "[t]he object being imaged is an object *similar to or in the same class as* the typical object" (*emphasis added*) (Applicant's specification, Page 14, lines 9-10). Furthermore, during the claimed 'comparison', "the image of the object being imaged [is compared] to images in the set of images of the typical object to find a closest matching image within the set" (Applicant's specification, Page 14, lines 18-20). In other words, the images themselves are compared during the comparison. Moreover, the "image of the typical object," and the "image of the object created by the imaging system," are images of *different* objects (i.e., object being imaged vs. typical object). Otherwise, such a comparison would have no reasonable meaning in the context of Applicant's specification.

Moreover, as claimed and consistently described and employed in Applicant's specification, 'edge density' and the use of edge density to determine an optimum focus system is *clearly separate and distinct from* the use the 'image comparison'. In particular, as recited in Claim 1, *either* image comparison alone is used to determine the optimum focus position *or* edge density in combination with image comparison are used. If the 'edge density' and the 'image comparison' were not separate and distinct, the recitation in Claim 1 of either "image comparison" ... or "an edge density... and the comparison" would be redundant. Moreover, the distinction is clearly made in Applicant's specification.

In contrast, Zwirn et al. clearly disclose, "[a] demand auto focus system [that] is driven by scene information only", explicitly recognizing that, "[i]n a scanned video system as the camera is brought into focus the high frequency content of the video signal will increase" (Zwirn et al., Abstract, lines 1-4). At Col. 3, lines 53-59, Zwirn et al. disclose, "the high frequency spectral density [e.g. edge density] of the video signal of a scene is an indication of the degree of focus of that scene". Zwirn et al. further disclose therein, "[b]y comparing the amount of high frequency components of one sample of a scene to an earlier sample, one can tell whether the direction of the focusing mechanism is correct or reversed". Specifically, at Col. 1, line 62, through Col. 2, line 10, relied upon by the Examiner, Zwirn et al. disclose,

"As the video information gathering device [i.e., scanned video system] is brought into focus the high frequency content of the video

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signal will increase. By passing the video signal through a band pass filter and then processing it in a conditional integrator, a control signal is generated whose amplitude contains information relating to the degree of focus.

The control signal is stored and later compared to a control signal derived from a subsequent scanning. Once a significant change in control signal levels is detected a drive signal is sent to the focusing device. If after being driven the subsequent scene has less high frequency content, then a drive signal in the opposite polarity or direction is sent to the focusing device. In this manner the scene is toggled into focus only when the scene is initially defocused."

Zwirm et al. are explicitly describing focusing an imaging device by comparing control signals where each of the control signals essentially represents a measure of an edge density of subsequent scans of the 'video information gathering device'. In particular, the control signal has an amplitude that is related to the degree of focus that is derived from the video signal by filtering and conditionally integrating. As such, the control signal amplitude generally increases or decreases in a manner that is proportional to a high frequency content (i.e., discernable edge density) of the scene being imaged. Thus, Zwirm et al. are essentially disclosing comparing an edge density or measure thereof in subsequent scans of the scene being imaged by the scanned video system. However, Zwirm et al. are clearly not disclosing, explicitly or implicitly, comparing images of an object or using such image comparison for focusing.

Moreover, the *only* 'comparing' or 'comparison' disclosed or suggested by Zwirm et al. is the comparing of the control signals and actions or devices related thereto. Zwirm et al. exclusively disclose comparing a measure of edge density in providing a drive signal to the focusing device. As such, Zwirm et al. clearly do not disclose employing a different comparison (e.g., image comparison) for focusing.

Similarly, Zwirm et al. do not disclose either a "typical object" or employing "an image of a typical object" in the comparison, as defined and claimed by Applicant. To the contrary, Zwirm et al. disclose comparing control signals from subsequent

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scans. *The nature of a scanned video system is that subsequent scans are images of essentially the same object or scene separated in time, and not images of different objects, e.g., "a typical object" and a separate 'object being imaged'.* Thus, Zwirn et al. are comparing control signals that measure edge density of two images of *essentially the same scene or object*, the images being taken at different times and with potentially different focus positions. Zwirn et al. make no mention of a difference between a current scene and a scene or scenes of subsequent scans. Therefore, Zwirn et al. do not disclose or suggest the "typical object" claimed by Applicant, which is by definition distinguished from the 'object being imaged'.

Moreover, for proper operation of their system, Zwirn et al. rely on the change in edge density determined by the amplitude of the control system to be a function of the focus position. Any other source of edge density change other than focus position would interfere with and most likely defeat the automatic focusing disclosed by Zwirn et al. In particular, the demand auto focusing system disclosed by Zwirn et al. is not able to distinguish between differences in edge density associated with errors in focusing and those associated with differences between imaged objects.

For example, consider a first scene of a tree that has a relatively high edge density due to the scene content. Further, consider a subsequent scene of a boat that has relatively fewer discernable edges and a lower edge density. The auto-focusing system according to Zwirn et al. would interpret the edge density change from the first scene to the subsequent scene as a decrease in focus sharpness instead of recognizing that the difference was simply due to a difference between imaged objects in the scene. In the example, the system of Zwirn et al. would attempt to change focus to increase the edge density of the subsequent scene even when the scene may already be in perfect focus. Such an action by the system of Zwirn et al. would result in moving away from an optimum or perfect focus position. Thus, the skilled artisan would readily recognize that Zwirn et al. do not and cannot be disclosing "a comparison between an image of a typical object" that is distinct and separate from "an image of the object created by the imaging system", contrary to the Examiner's contention. To contend otherwise is inconsistent with and would likely defeat the operation of the system disclosed by Zwirn et al.

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The contention by the Examiner at page 5 of the Present action, "[s]ince Zwirn does cover the method (b) which recites both an 'edge density and image comparison', therefore method [sic] using 'image comparison' or method 'edge density', to compute a [sic] optimum focused image, automatically are covered under the same rejection," is respectfully incorrect. Zwirn et al. do not disclose, image comparison as separate and distinct from edge density, as is claimed in Applicant's Claim 1. Also, Zwirn et al. fail to disclose "a typical object" as separate and distinct from 'the object being imaged', also as is claimed in Applicant's Claim 1. Zwirn et al. do not disclose employing *either* image comparison *or* edge density in combination with image comparison, contrary to that contended by the Examiner. Thus, the Examiner has failed to show that Zwirn et al. do disclose and respectfully can disclose that recited in Applicant's Claim 1.

Similarly, Zwirn et al. fail to disclose, explicitly or implicitly, that recited in Applicant's base Claim 5. For example, as discussed above, Zwirn et al. at least fail to disclose an "image of a typical object" as separate and distinct from "an image of the object created by the imaging system" (i.e., 'being imaged'). Thus, Zwirn et al. do not and cannot disclose, "adjusting a second focus position corresponding to *an image of the object* by a difference between focus positions for a reference *image of a typical object* and an *image of the typical object* that closely matches *the image of the object*," as recited in Applicant's Claim 5.

Furthermore, Zwirn et al. never disclose or even suggest 'image comparisons', as defined and claimed by Applicant, and clearly fail to disclose relating focusing or focus positions to focus positions of any other image "that closely matches" the image of the object, as is further recited in Applicant's Claim 5. *The only reference by Zwirn et al. to focus position concerns the control signal as a measure of edge density in the scene.* In other words, according to Zwirn et al., the only consideration in focusing is associated with maximizing the edge density of the scene as reflected in the amplitude of the control signal.

It is respectfully irrelevant whether or not Zwirn et al. disclose, "focusing an scene [sic] and scene is not limited to represent an object which is further apparently belongs to some class [sic]", as contended by the Examiner on page 7 of the Present Action. Such a contention simply *ignores* Applicant's explicit definition of the

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'typical object', its 'image' and their respective relationship to 'the object being imaged' and 'the object's image'.

With respect to Applicant's base Claim 10, Applicant submits that Zwirn et al. fail to disclose, explicitly or implicitly, that recited in Applicant's base Claim 10, contrary to that contended by the Examiner. However, Applicant amended Claim 10 herein to better clarify the differences between Applicant's claim and the disclosure by Zwirn et al. In particular, Applicant amended Claim 10 to read "wherein the object is a typical object that is representative of a class of objects containing an object being imaged". Support for the amendment is provided by Applicant's specification and claims, as originally filed. Further, the amendment of Claim 10 does not change the scope thereof but merely clarifies Applicant's intended meaning of the "object" that is representative of the class. In particular, the amendment makes clear that the 'typical object' is representative of a class of objects that is separate and distinct from the 'object being imaged'. At least since Zwirn et al. clearly fail to disclose, explicitly or implicitly, imaging a typical object that is distinguished from an object being imaged, as is discussed above, then Zwirn et al. fail to disclose each and every element recited in Applicant's amended Claim 10.

Regarding Applicant's base Claim 31, Zwirn et al. fail to disclose, explicitly or implicitly, that recited therein. For example as discussed above, Zwirn et al. at least fail to disclose, "a typical object," "a reference image of a typical object," and "an image of the typical object that closely matches the image of the object", as recited in Applicant's Claim 31. Furthermore, Zwirn et al. never disclose or even suggest, "comparing the image of the object to images in the set of images of the typical object to find a closest matching image", as recited in Applicant's Claim 31. As discussed above, the *only* comparison disclosed or even suggested by Zwirn et al. is a comparison of control signals derived from a measure of edge density in successive images captured by a scanned video system.

Claim 2 and 3 are dependent from and include all of the limitations of base Claim 1. Claim 6-8 are dependent from and include all of the limitations of base Claim 5. Claim 11 and 12 are dependent from and include all of the limitations of amended base Claim 10. Claim 32 and 33 are dependent from and include all of the limitations of base Claim 31. Since Zwirn et al. fail to disclose all element of the base

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claims for the reasons discussed above, Zwirn et al. similarly fail to disclose all elements of dependent Claims 2, 3, 6-8, 11, 12, 32 and 33 for at least the reasons given above.

Hence, the Examiner failed to show that there is "no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention" as required by the Federal Circuit for establishing *prima facie* anticipation under 35 U.S.C. 102. *Scripps Clinic & Research Found. V. Genentech Inc.*, 927 F.2d 1565, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991). The rejection of Claims 1-3, 5-8, 10-12 and 31-33 under 35 U.S.C. 102(b) in view of Zwirn et al. is unsupported by facts in evidence and must be withdrawn.

The Examiner rejected Claims 4 and 9 under 35 U.S.C. 103(a) as being unpatentable over Zwirn et al. further in view of Applicant's contended admitted prior art. In particular, the Examiner contended, "it would be apparent to one of ordinary skill in the art that if scene or object is large enough to scan or image at one time, different parts of scene or object may be brought into focus where each part has different edge density at different focus position," and that such differences in focus position, "would appear like warpage and this is well known in the art too". The Examiner further contended that in a background section of the instant application, Applicant admitted, "[i]f the PCB is large, several targets may be used at different xy-locations on the board to account for possible warpage of the PCB". The Examiner concluded it would be obvious, "to view a scene or object with different focusing targets on the scene or object all together as a warpage".

Applicant respectfully traverses the rejection under 35 U.S.C. 103(a) on the grounds that the Examiner failed to establish and properly support a *prima facie* case of obviousness with respect to Zwirn et al. further in view of Applicant's contended admission (hereinafter 'the references'). Specifically, the Examiner did not show, with respect to the rejected claims, *each of* 1) "some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings"; 2) "a reasonable expectation of success" in modifying or combining the teachings of the references; *and* 3) that the prior art references "teach or suggest all the claim limitations", as required by the courts. MPEP, Section 2142, *Establishing a Prima*

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Facie Case of Obviousness. Moreover, the Examiner failed to establish that the teaching or suggestion to make the claimed combination and the reasonable expectation of success are both "found in the prior art, and not based on applicant's disclosure". *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir.1991) (*emphasis added*).

In particular, Applicant does not claim the use of targets in either Claim 4 or Claim 9. Therefore, the Examiner's rejection based on Applicant's disclosure of using several targets is, at best, respectfully confusing, if not moot.

Furthermore, Zwirn et al. neither disclose nor suggest the use of targets for focusing on a scene (or object). In fact, the demand focusing system disclosed by Zwirn et al. specifically relies on an edge density determination over an entire scene as is evidenced by the use of, "high frequency spectral density of the video signal," that is integrated to create the control signal used for focusing (Zwirn et al., Col. 3, lines 53-55). By employing the entire scene to perform focusing, the system of Zwirn et al. is not and could not be capable of discerning and subsequently employing individual spaced apart targets within the scene for focusing. Thus, the Examiner's combination of 'targets' from Applicant's disclosure with the disclosure of Zwirn et al. is inconsistent with a principle of operation of the system of Zwirn et al. The courts have consistently held that a rejection based on a modification of the reference that destroys the intent, purpose or function of the invention disclosed in the reference is not a proper rejection and the *prima facie* case of obviousness cannot be properly made as a result. See for example, *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Moreover, Claim 4 is dependent from and includes all of the limitations of base Claim 1, while Claim 9 is dependent from and includes all of the limitations of base Claim 5. Since Zwirn et al. fail to disclose or suggest all of the limitations of the base claims, as described above, Zwirn et al. similarly fail to disclose all of the limitations of dependent Claims 4 and 9. The prior art, contended by the Examiner to have been admitted by Applicant regarding targets, fails to add to the limitations lacking in the disclosure by Zwirn et al. As such, the Examiner's rejection of Claims 4 and 9 lacks evidence of record that supports a teaching or suggestion in the prior art of all claim limitations, as required by the courts for supporting a *prima facie* case of obviousness.

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See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Failure to teach or suggest all of the claim limitations, in and of itself, defeats a *prima facie* case of obviousness.

In addition, the Examiner failed to provide a suggestion or motivation to combine/modify the disclosure of Zwirn et al. with the contended admission of prior art by Applicant. Specifically, no motivation to combine/modify that is found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art is provided by the Examiner. The Examiner failed to provide, "evidence that 'a skilled artisan, *confronted with the same problems as the inventor* and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed'" (*emphasis is added*). *Ecolochem, Inc. v. Southern Calif. Edison Co.*, 227 F.3d 1361, 1375, 56 USPQ2d 1065, 1075 (Fed. Cir. 2000) (quoting *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998)). Hence, the Examiner has failed to establish a legitimate or supported motivation to combine the references, which in and of itself, also defeats a *prima facie* case of obviousness.

At least for failing to establish that all of the limitations of the rejected claims are disclosed or suggested, as well as for separately failing to provide a legitimate motivation to combine and/or modify the teachings of references, the Examiner's rejection under 35 U.S.C. 103(a) lacks proper support for a *prima facie* case of obviousness according to the courts. Thus, the rejection of Claims 4 and 9 under 35 U.S.C. 103(a) over Zwirn et al. in view of Applicant's contended admitted prior art must be withdrawn.

Claims 21-24, 26-28 and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zwirn et al. further in view of Onoguchi et al., U.S. Patent No. 6,067,164 (hereinafter 'Onoguchi et al.'). The Examiner contended, "Zwirn discloses video camera (col. 3, lines 42-45) which captures the object or scene image and sends it to the circuit in figure 1". The Examiner admitted, "Zwirn does not teach the control of automatic focusing using a software stored on a memory" but contended, "it is very well known in the art that any image processing function controlled using only a hardware, can also be controlled using software and this is further supported by Onoguchi". Regarding Onoguchi et al., the Examiner further contended, "Onoguchi

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performs auto-focusing on electron microscope for semiconductor inspection (col. 3, lines 40-52; col. 20, lines 13-21) and teaches high frequency component determination to find the sharp focus position (col. 24, lines 58-68) ...". The Examiner concluded that it would have been obvious, "to control the auto-focusing using a computer program as taught by Onoguchi in the invention of Zwirn because both references belong to the same field of automatic focusing of an object and Onoguchi [*sic*] an automatic image auto-focusing using software so that a work load on the operator can be reduced while the throughput of the process can be improved considerably". The Examiner referenced Onoguchi et al., Col. 3, lines 50-52.

Applicant respectfully traverses the rejection under 35 U.S.C. 103(a) on the grounds that the Examiner failed to establish and properly support a *prima facie* case of obviousness with respect to Zwirn et al. further in view of Onoguchi et al. (hereinafter 'the references'). Specifically, the Examiner did not show, with respect to the rejected claim, *each of* 1) "some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings"; 2) "a reasonable expectation of success" in modifying or combining the teachings of the references; *and* 3) that the references when combined, "teach or suggest all the claim limitations", as required by the courts for establishing *prima facie* obviousness. MPEP, Section 2142, cited *supra*. Moreover, the Examiner failed to establish that the teaching or suggestion to make the claimed combination and the reasonable expectation of success are both "found in the prior art, and not based on applicant's disclosure" (*emphasis added*). *In re Vaack*, cited *supra*. In short, the Examiner's reasons for rejecting Claims 21-24, 26-28 and 34-35 respectfully fail to meet even the minimum requirements necessary for establishing and maintaining *prima facie* obviousness with respect to the references.

Regarding Applicant's base Claims 21 and 26, the Examiner failed to show that the combined references teach or suggest all of the claim limitations recited therein. For example, Zwirn et al. combined with Onoguchi et al. at least do not disclose or suggest determining an optimum focus position where, "the determination" is "either an *image comparison-based* determination or an *edge-density-based* determination *and the image comparison-based* determination", as defined in Applicant's

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specification and recited in Applicant's Claim 21 (*emphasis added*). Similarly, Zwirn et al. combined with Onoguchi et al. at least do not disclose or suggest, "an *image comparison* of an image of the object created by the imaging system to an image of a typical object in a set of images of the typical object or both of an *edge density determination and the image comparison* to determine an optimum focus position for imaging the object", as defined by Applicant and recited in Applicant's Claim 26 (*emphasis added*).

In particular, as is discussed above, the disclosure of Zwirn et al. is entirely confined to automatic focusing employing an *edge density determination*. According to Zwirn et al., edge density determinations in the form of a pair of control signals are compared for a scan and a subsequent scan. See for example, Zwirn et al., Col. 3, lines 50-59, and Col. 1, line 62, through Col. 2, line 9. Thus, Zwirn et al. may disclose an edge-density based determination.

However, Zwirn et al. neither disclose nor suggest an "*image comparison-based*" determination that is separate from an edge-density-based determination, as recited in Claim 21 (*emphasis added*). Moreover, without disclosing or suggesting a separate 'image comparison-based' determination, Zwirn et al. do not and respectfully cannot disclose a determination that is separately both "an edge-density-based ... *and the image comparison-based* ...", as further recited in Claim 21 (*emphasis added*). Similarly, Zwirn et al. at least fail to disclose or suggest "an *image comparison*", as defined in Applicant's specification and recited in Claim 26. Applicant respectfully reminds the Examiner that as defined in Applicant's specification, the image comparison, as recited in Claims 21 and 26, is defined as comprising, "comparing the image of the object being imaged to the set of images of the typical object" (Applicant's specification, Page 20, lines 31-32). As discussed above, Zwirn et al. never disclose or even suggest such a comparison that involves 'images of the typical object' as distinguished from 'the object being imaged'. Moreover, the *only* disclosure regarding 'comparing' by Zwirn et al. is with respect to a comparison of control signals.

Onoguchi et al. do not add to the limitations that are lacking in the disclosure of Zwirn et al. In particular, Onoguchi et al. fail to disclose or suggest "an image comparison-based determination", as defined in Applicant's specification and recited

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in Applicant's Claim 21. Likewise, Onoguchi et al. do not disclose "an image comparison", as defined in Applicant's specification and recited in Applicant's Claim 26. As such, the combination of Zwirn et al. and Onoguchi et al. fails to disclose or suggest all of the claim limitations separately recited in each of Applicant's base Claims 21 and 26. The combined references failing to teach or suggest *all* of the claim limitations, in and of itself, defeats a *prima facie* case of obviousness.

Regarding a motivation to combine the teachings of Zwirn et al. and Onoguchi et al., the Examiner relied on both a common field of the invention and a similarity in a disclosure regarding the use of high frequency components. However, the Examiner failed to establish and support a legitimate motivation to combine/modify the references as required by the courts.

In particular, Applicant respectfully reminds the Examiner that, "[o]bviousness can *only* be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation *to do so* found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art" (*emphasis added*). MPEP §2143.01 *Suggestion or Motivation to Modify the References*. "[T]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art *also suggests the desirability* of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)" (*emphasis added*). MPEP §2143.01, cited *supra*. For a motivation to combine/modify to be legitimate and therefore, be employed to support a *prima facie* case of obviousness, there must be "evidence that 'a skilled artisan, *confronted with the same problems as the inventor* and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed'" (*emphasis is added*). *Ecolochem, Inc. v. Southern Calif. Edison Co.*, cited *supra*. "[E]ven when the level of skill in the art is high, the Board [or the Examiner] must identify specifically the principle, known to one of ordinary skill, which suggests the claimed combination. In other words, the Board [or the Examiner] *must explain the reasons* one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious" (*emphasis added*). *In re Rouffet*, cited *supra*.

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The Examiner has not established that some teaching, suggestion, or motivation existed in either the references themselves or in the knowledge of the skilled artisan, without knowledge of Applicant's disclosure, that would have motivated the combination and modification of the disclosure of Zwirn et al. using the disclosure of Onoguchi et al. as suggested by the Examiner. Furthermore, the Examiner has not demonstrated that the prior art recognized the *desirability* of the proposed combination/modification. Similarly, the Examiner has not explained the reasons why the skilled artisan would have been motivated either to select the *particular references* or to combine the references as suggested by the Examiner. There is simply *no evidence* to support a finding that, 'a skilled artisan, *confronted with the same problems as the inventor* and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed'. *In re Rouffet*, cited *supra*.

Hence, the Examiner clearly has not provided a legitimate motivation to combine/modify the references in support of a *prima facie* case of obviousness. An absence of a legitimate or supported motivation to combine Zwirn et al. and Onoguchi et al., without more, is sufficient to defeat a *prima facie* case of obviousness with respect to at least base Claims 21, 26, 34 and 35. Furthermore, given the lack of a supported motivation to combine the respective references, *any* consideration regarding what the respective combination may or may not disclose is moot. However, as discussed above, the combined reference further lack a teaching or suggestion of all claim limitations.

At least for failing to provide a legitimate motivation to combine/modify, as well as for failing to establish that all of the limitations of the rejected claims are disclosed or suggested, the Examiner's rejection under 35 U.S.C. 103(a) of at least base Claims 21, 26, 34 and 35 lacks proper support for a *prima facie* case of obviousness according to the courts.

Applicant respectfully reminds the Examiner that if an independent base claim is non-obvious under 35 U.S.C. 103, any claim depending therefrom is likewise non-obvious. *In re Fine*, 837, F.2d, 1071, 5 USPQ 2d, 1596 (Fed. Cir. 1988). As such, having failed to establish *prima facie* obviousness with respect to base Claims 21 and 26, the Examiner has similarly failed to establish *prima facie* obviousness with

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respect to dependent Claims 22-24 and 27-28, respectively. Thus, the rejection of Claims 21-24, 26-28 and 34-35 under 35 U.S.C. 103(a) over Zwirn et al. and Onoguchi et al. must be withdrawn.

Claims 25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zwirn et al. further in view of Onoguchi et al., and further in view of Rooks et al., IBEE, June 5, 1999, "Development of an inspection process for ball-grid array technology using scanned-beam x-ray laminography" (hereinafter 'Rooks et al.').

Applicant respectfully traverses the rejection under 35 U.S.C. 103(a) on the grounds that the Examiner failed to establish and properly support a *prima facie* case of obviousness with respect to Zwirn et al. further in view of Onoguchi et al. and further in view of Rooks et al. (hereinafter 'the references'). Specifically, the Examiner did not show, with respect to the rejected claims, *each of* 1) "some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings"; 2) "a reasonable expectation of success" in modifying or combining the teachings of the references; *and* 3) that the prior art references "teach or suggest all the claim limitations", as required by the courts. MPEP, Section 2142, cited *supra*. Moreover, the Examiner failed to establish that the teaching or suggestion to make the claimed combination and the reasonable expectation of success are both "found in the prior art, and not based on applicant's disclosure" (*emphasis added*). *In re Vaeck*, cited *supra*. In short, the Examiner's reasons for rejecting Claims 25 and 30 respectfully fail to meet even the minimum requirements necessary for establishing and maintaining *prima facie* obviousness with respect to the references.

Claim 25 is dependent from and includes all of the limitations of independent base Claim 21. Claim 30 is dependent from and includes all of the limitations of independent base Claim 26. As discussed above, Zwirn et al. and Onoguchi et al. fail to teach or suggest all of the claim limitations of base Claims 21 and 26. Rooks et al. fail to add to the claim limitations that are lacking in the combination of Zwirn et al. and Onoguchi et al. such that the combination of Zwirn et al., Onoguchi et al. and Rooks et al. similarly fails to disclose or suggest all of the claim limitations of the base claims. Hence, Zwirn et al. further in view of Onoguchi et al. and further in

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view of Rooks et al. fail to teach all of the limitations of either dependent Claim 25 or dependent Claim 30, as required for a finding of *prima facie* obviousness. See *In re Royka*, cited *supra*. As such, and without more, a *prima facie* case of obviousness with respect to Zwirn et al. further in view of Onoguchi et al. and further in view of Rooks et al. is defeated.

Moreover, as discussed above, the Examiner has not provided a legitimate motivation to combine/modify Zwirn et al. and Onoguchi et al. Without a legitimate motivation to combine/modify Zwirn et al. and Onoguchi et al., the Examiner lacks a legitimate motivation to combine Zwirn et al. and Onoguchi et al. with any other reference including, but not limited to, Rooks et al. Furthermore, the Examiner's motivation to combine Rooks et al. with Zwirn et al. and Onoguchi et al. similarly lacks legitimacy for the same reasons given above with respect to the combination of Zwirn et al. and Onoguchi et al. See at least MPEP §2143.01, cited *supra*; *In re Mills*, cited *supra*; *In re Rouffet*, cited *supra*; and *Ecolochem, Inc. v. Southern Calif. Edison Co.*, cited *supra*.

At least for failing to provide a legitimate motivation to combine/modify, as well as for separately failing to establish that all of the limitations of the rejected claims are disclosed or suggested, the Examiner's rejection under 35 U.S.C. 103(a) lacks proper support for a *prima facie* case of obviousness according to the courts. Thus, the rejection of Claims 25 and 30 under 35 U.S.C. 103(a) over Zwirn et al. in view of Onoguchi et al. and further in view of Rooks et al. must be withdrawn.

Applicant appreciates the Examiner's allowance of Claims 15-20. Further, Applicant appreciates the Examiner's acknowledgement of the allowability of Claims 14 and 29 if rewritten in independent form including all of the limitations of the base claim and any intervening claim. However, in light of the discussion hereinabove, Applicant respectfully declines to rewrite Claims 14 and 29 at this time and requests reconsideration.

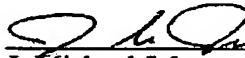
In summary, Claims 1-12 and 14-35 are pending. Claims 1-12, 21-28 and 30-35 were rejected. Claims 15-20 were allowed and Claims 14 and 29 were objected to. Claims 4, 10, 14, 21 and 26 are amended herein. For the reasons detailed above, it is respectfully submitted that Claims 1-12, 14, 21-35 are in condition for allowance. It

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is respectfully requested that Claims 1-12, 14, 21-35 be allowed along with allowed Claims 15-20, and that the application be passed to issue at an early date.

Should the Examiner have any questions regarding the above, the Examiner is urged to contact the undersigned by telephone at the number given below or Robert T. Martin, Attorney for Applicant, Registration No. 32,426 at Agilent Technologies, Inc., telephone number (650) 485-7533.

Respectfully submitted,
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CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on the date shown below.


J. Michael Johnson

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